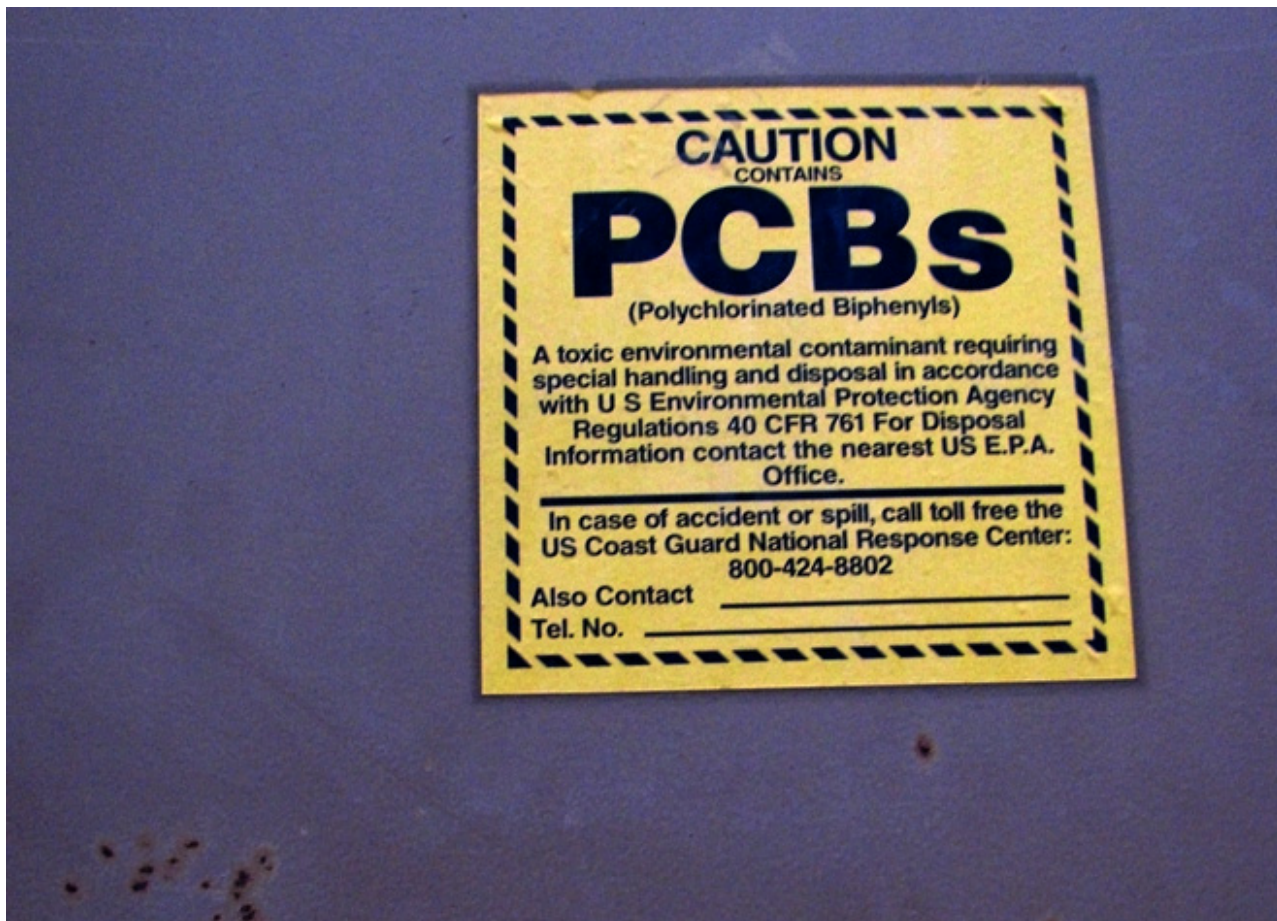


Banned Chemical May Interfere With Pregnancy



PCB exposure may interfere with a woman's ability to get pregnant, a new study of women undergoing in vitro fertilization suggests. The study of 765 women found that those whose blood contained the highest levels of a particular form of polychlorinated biphenyl — one known as PCB 153 — were 41 percent less likely to give birth than women with the lowest levels.

ScienceNews
MAGAZINE OF THE SOCIETY FOR SCIENCE & THE PUBLIC

One contributing factor: Fertilized eggs were half as likely to implant in women if blood concentrations of PCB-153 fell in the top 25 percent of those measured among all participants. The study [appeared](#) online Feb. 24 in *Environmental Health Perspectives*.

In women not undergoing IVF it would be difficult to know when to test for implantation, says [John Meeker](#), who led the new study. So the new data may provide a window into a subtle fertility risk that would be almost impossible to find in the general population, explains Meeker, an environmental and reproductive epidemiologist at the University of Michigan School of Public Health in Ann Arbor.

His team studied blood and urine that had been collected from 765 women treated at fertility clinics in the Boston area between 1994 and 2003. Together, the women had gone through a total of 827 cycles of attempted fertilization — processes that led to 297 live births, 229 implantation failures and 301 pregnancies that naturally terminated within 20 weeks of implantation.

The researchers went into the study suspecting that the risk of implantation failure might be elevated among the most highly exposed women, based on earlier studies by others showing a similar problem in PCB-exposed rodents. Two years ago, Meeker's team also showed that in women, PCBs can enter follicles, structures that hold egg cells. So this “does suggest that these chemicals can make it to a place where they would be in contact with the maturing egg,” he says.

More than 200 related PCBs exist. Most people inadvertently encounter a broad mix of these, including traces of PCB-153, through food and the environment. Because some of these pollutants are difficult and costly to measure in blood, the researchers tested for the sum of all PCBs as well as for a narrow spectrum of specific ones or mixes of several with related functional attributes, such as binding to hormone receptors in cells or — in PCB-153's case — an ability to turn on certain detoxifying enzymes.

The authors caution that although they found the strongest signs of potential fertility risks associated with PCB-153, there were hints that other PCBs might also impair fertility. The team notes that PCB-153 might even serve as a marker for one or more other reproductively toxic PCBs — or related pollutants — that co-occur in the environment.

“I find the data intriguing — and think they have something here,” says [David Carpenter](#), director of the Institute for Health and the Environment at the University at Albany in New York. “I'm also underwhelmed,” he adds.

The researchers probed for a number of different reproductive endpoints, he says, including miscarriage, and what are known as chemical pregnancies — where a fertilized egg dies before a fetal heartbeat can be detected. Only implantation failures appeared at rates greater than would be expected by chance. And only for PCB-153, he adds, not for any of several different PCBs or PCB combinations.

The data would be more convincing, Carpenter says, if the authors could point to some mechanism by which PCBs might impair reproduction — such as changing the permeability of the outer membrane of egg cells.

Several years ago, Carpenter's team showed that some cells — nerve cells and immature immune cells — can incorporate PCBs, including PCB-153, altering the fluidity of the cells' membranes. "Something as fundamental as changing the fluidity of the membrane in the oocyte [egg cell] or uterus could, in fact, have dramatic effects on implantation," Carpenter says.

Until their U.S. production was banned in 1979, most PCBs were used as insulating liquids in electrical transformers. Over the years, PCBs also have found use in other applications, including as an [ingredient of exterior building caulk](#) and in some floor finishes. Because many PCB-containing materials are still in use and because any PCBs that enter the environment do not readily break down, people continue to encounter exposure to these potentially toxic compounds, most often through contaminated food.

Image: [silverfuture](#)/Flickr

See Also:

- [Mutant Fish Safely Store Toxins in Fat](#)
- [Potential Neuropoison Could Be in Our Food](#)
- [Sex-Changing Chemicals Make Male Starlings Sing Sweet Songs](#)
- [Pollution From Yard Runoff May Be Worse Than Thought](#)
- [NASA Maps Global Air Pollution](#)
- [EPA's Pollution-Busting Cops Have Lost Focus, Say Watchdogs](#)